2021
Status Report
Mimbres Figwort
(*Scrophularia macrantha*)
Black Range, Gila National Forest

Daniela Roth
EMNRD – Forestry Division
Santa Fe, NM
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INTRODUCTION

In 2013 the Silver Fire burned 138,698 acres of the Black Range, including a significant portion of the known range for Mimbres figwort (*Scrophularia macrantha*) (Figure 1). In 2014 survey results showed that Mimbres figwort was far more rare than previously thought (Roth 2016). No plants were found in previously documented unburned sites for unknown reasons, although they may have experienced consequences of some post-fire flooding. Other reasons may include misidentification and poor mapping. The majority of plants documented in 2014 were located inside Railroad Canyon, within the Silver Fire perimeter. Because Mimbres figwort appears to have a preference for growing in cool, shady areas, underneath the canopy of mixed conifer forests and along stream banks, it was feared that the species may not persist over time in the majority of documented sites on the Gila National Forest due to radical habitat alterations caused by the Silver Fire. An informal survey in Railroad Canyon in 2018 found a significant decline in the number of plants over the 2014 count (74%decline). Declines were attributed to drought conditions and post-fire habitat alteration.

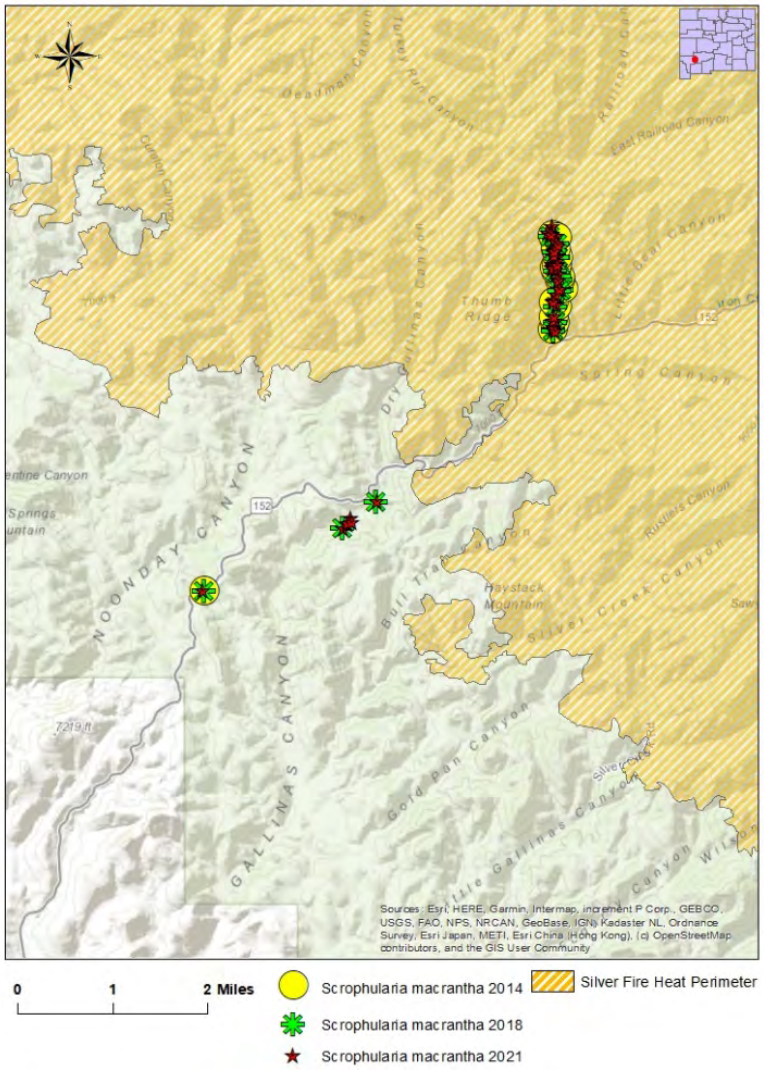

Figure 1. Documented distribution of Mimbres figwort in the Black Range, Gila National Forest.

Description and Status

Mimbres figwort is a perennial herb in the figwort family (Scrophulariaceae). It is only known to occur in Grant and Luna counties of New Mexico, where it grows on steep, rocky, usually north-facing igneous cliffs and talus slopes, and occasionally in canyon bottoms along streams in piñon-juniper woodlands and lower montane coniferous forests between 6,500 and 8,200 ft (NMRPTC 1999). Associated species include ponderosa pine (*Pinus ponderosa*), pinion pine (*Pinus edulis*), Douglas fir (*Pseudotsuga menziesii*), chokecherry (*Prunus virginiana*), New Mexico locust (*Robinia neomexicana*), Arizona walnut (*Juglans major*), alder (*Alnus oblongifolia*), boxelder (*Acer negundo*), scarlet cinquefoil (*Potentilla thurberi*), Fendler brickellbush (*Brickellia fendleri*), mountain brickellbush (*Brickellia grandiflora*), James buckwheat (*Eriogonum jamesii*), mountain brome (*Bromus carinatus*), Gambel oak (*Quercus gambelii*), Mexican catchfly (*Silene laciniata*), scarlet bugler (*Penstemon barbatus*), fetid goosefoot (*Dysphania graveolens*), scarlet gilia (*Ipomopsis aggregata*), sweet four o'clock (*Mirabilis longiflora*), mountain leaftail (*Pericome caudata*), and Carruth sagewort (*Artemisia carruthii*).

Mimbres figwort was listed endangered by the state of New Mexico due to wildfire impacts and limited distribution. It is also listed sensitive with the BLM and the US Forest Service. NatureServe gives Mimbres figwort conservation rank of G2/S2 (imperiled). The New Mexico Rare Plant Conservation Strategy gives Mimbres figwort an overall Conservation Status of 'Weakly Conserved" due to its limited distribution and high levels of documented threats, including wildfires, mining and quarrying (EMNRD-Forestry Division 2017).

METHODS

All occupied sites in the Black Range found in 2014 were visited in 2018 and 2021, including the Railroad Canyon site which was lightly to severely burned in the 2013 Silver Fire, the unburned HWY 152 site and the unburned lower Gallinas site which could not be accessed in 2014 due to flooding during the survey period (Figure 1). Surveys were timed with the flowering period of the species, during late July and early August. In 2018 surveys were performed on 7/25 and 8/7, in 2021 surveys were performed on 8/3, 8/4, and 8/5. Location information came from the 2014 status survey (Roth 2016). Waypoints and associated data were collected with a Samsung Galaxy S2 tablet using the Collector App. Additional information was collected on the vigor, reproductive status and recent disturbances associated with the general area of occupation. At some waypoints the number of plants was estimated within the range of visibility due to the steepness of the terrain and accessibility issues.

RESULTS

Five years after the fire only 67 individuals were documented in Railroad Canyon in 2018 (Table 1). Twenty plants were documented along HWY 152 and 22 plants were found below lower Gallinas Campground. The lower Gallinas site could not be accesses in 2014 due to flooding during the survey period, but the creek was dry in 2018 and the historic sites were relocated and documented. In 2021 467 individuals were estimated from Railroad Canyon, 79 plants were documented from the lower Gallinas Creek site, and 30 individuals were observed at the HWY 152 site (Figures 2 & 3, Table 1). The majority of plants were flowering at the survey dates in early August. In 2021 most plants were rated in good condition, some were rated in vigorous condition and none were considered stressed. Site conditions had changed drastically from 2018, largely attributed to rainfall in 2021 (Figures 4, 5, & 6). In 2018 there was no water in Gallinas Creek, nor in Iron Creek, both of which are largely perennial streams, especially during monsoon season. The highest number of plants were found in Railroad Canyon during all three survey years. The majority of plants were found in the upper reaches of the Railroad Canyon sites, in habitats that burned moderately to severely in the 2013 Silver Fire.

Table 1. Number of Mimbres figwort plants at 3 sites in the Gila National Forest from 2014 to 2021.

Site Name	**Number of Plants**		
	2014	**2018**	**2021**
Railroad Canyon	255	67	467
Lower Gallinas	N/A	22	79
HWY 152	10	20	30

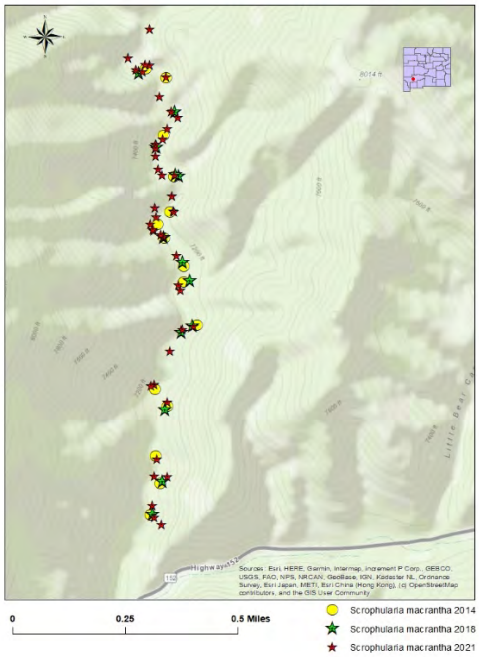

Figure 2. Distribution of Mimbres figwort in Railroad Canyon, within the fire perimeter.

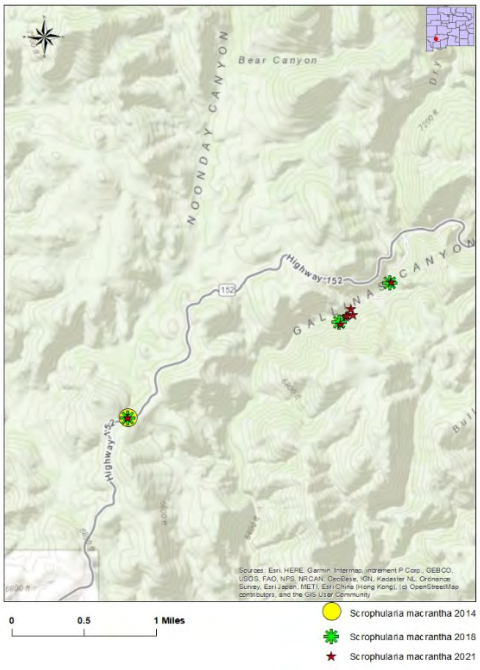

Figure 3. Distribution of Mimbres Figwort outside the fire perimeter in lower Gallinas Canyon and along HWY 152.

Figure 4. Site condition 8/4/2014, upper Railroad Canyon.

Figure 5. Site conditions 7/25/2018, upper Railroad Canyon

Figure 6. Site conditions 8/8/2021, upper Railroad Canyon

DISUSSION

Concerns for the continued existence of Mimbres figwort within the burn perimeter at Railroad Canyon rising from the severity of the fire and the 2018 survey results were alleviated in 2021 when many more plants were documented not only from Railroad Canyon but also from the other 2 unburned sites. The species is doing well with increased competition from other native plants that are thriving in the post-fire habitat, in the absence of an overstory tree canopy. Mimbres figwort appears to be more impacted by drought conditions than by the removal of the canopy in severely burned areas following the fire. We do not have population estimates from prior to the fire. Hence, we cannot say whether the increased number of plants represent recovery post-fire, or just an exceptionally good year for the species. Although plant numbers increased at all sites over previous estimates, including the unburned sites, indicating a response to rainfall in 2021. The nearest rain gauge is located in Kingston, about 8 miles due east of Railroad Canyon. The 30-year average annual rainfall for Kingston is 19.01 inches between October and September of the following year (CoCoRaHS 2021). In 2018 the annual rainfall amount was only 16.58”, over 3 inches less than in 2021 (19.89”). In 2014 the majority of plants occurred in the upper extent of the population in Railroad Canyon, which was moderately to severely burned with little or no overstory remaining. In 2018 only 6 plants were found in a location where previously 100 – 200 plants were documented. In 2021 92 plants were documented from the same vicinity. It is unknown whether the high number of plants in the upper severely burned reaches of Railroad Canyon is due to fire impacts or whether population numbers were highest in this area even

prior to the fire. It is likely that Mimbres figwort is a weak perennial with recruitment depending strongly on rainfall amounts. The majority of plants remain in the upper reaches of Railroad Canyon below the junction with Gallinas Canyon. It is possible that additional plants occur beyond the junction of the 2 canyons, but none have been documented at this time.

Eight years following the Silver Fire, Mimbres figwort has recovered well from the fire and is experiencing little impact from long term habitat alterations caused by the fire. It is unknown whether populations are corresponding positively to fire due to a lack of information on population status prior to the Silver Fire. However, climatic fluctuations clearly impact the abundance and persistence of this species and prolonged drought conditions brought on by climate change may negatively impact Mimbres figwort populations over the long term. Populations should be closely monitored for population trends in burned and unburned areas, and seeds need to be collected for ex-situ storage and conservation purposes.

LITERATURE CITED

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